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ZOOLOGICAL NOTES.—*Protozoans.*—Kunstler describes *Trichomonas vaginalis* as extremely protean in external form. Pseudopodia arise over the general surface, or are localized at the posterior end.——G. Klebs discusses (*Bot. Zeitung*, 1883), the relationship of the Flagellata to the Algæ and Infusoria. Some Flagellata in the older sense are referred to the lower chlorophyllaceous Algæ; such are, in addition to the Volvocinæ, the Chlamydomonads. The fresh-water forms of the Peridineæ are, with Leuckart, regarded as plants. The Euglenaceæ and Peranemeæ are separated from the Ciliata and placed among the Infusoria.

Crustaceans.—A remarkable shrimp (*Nematocarcinus gracilipes*) was dredged by the *Talisman* at a depth of 850 meters, which is analogous to certain blind cave phalangids in the enormous length and slenderness of the antennæ and legs. The eyes are large and well developed, though the stalks are short. In a new form (*Acanthephyra pellucida*) the feet are adorned with phosphorescent bands.

Mammals.—Miklucho Maclay finds that the average temperature of the body of *Echidna hystrix* is 78° F., or very little more than that of fish, and about 25° less than mammals generally.——So far as known, congenital deafness is only known to exist besides man in the cat, and always in white ones, and most usually in females.

PHYSIOLOGY.[1]

THE PHYSIOLOGY OF THE CARBOHYDRATES.—In the London *Lancet* of Januury and February, 1884, Dr. Pavy records some interesting experiments which prove the presence in the stomach and intestines of animal ferments which have been hitherto unknown. Dr. Pavy's general object was to discover the history of carbohydrates in the animal system :

1. Solutions of grape sugar placed in contact with the mucous membrane of the stomach or intestine of a recently killed rabbit, become changed into a carbohydrate which has less power of reducing Fehling's solution than grape sugar. Boiling the mucous membrane destroys its power of acting on glucose. This power of the mucous membrane is due to a ferment which is contained within the glands of the stomach and intestine, but is not secreted by the superficial epithelium covering the walls. The action of the ferment was gradual and progressed better at the temperature of the body than at lower temperatures. The ferment was not destroyed by drying and can be preserved when the mucous membrane is brought into this condition. In ruminant animals the ferment is not found in the true or fourth stomach, which corresponds to the single stomach of other animals, but in the three anterior chambers of the quadruplex organ.

2. The stomach and intestine are shown also to yield a ferment

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[1] This department is edited by Professor HENRY SEWALL, of Ann Arbor, Michigan.

which has the power of converting cane sugar into a carbohydrate which reduces Fehling's solution, but does so less completely than grape sugar; this product, as well as that previously described, has about the same reducing power as maltose. The stomach in animals generally contains much less of the cane sugar ferment than the intestine. This ferment appears to be contained not in the glands of the mucous membrane, but in the superficial epithelium of that coat. (It may be remarked that the cane-sugar-converting power of the mucus secreted by the lining epithelium of the stomach has long been known.)

3. This conversion of cane sugar into a maltose-like body occurs under physiological conditions, for when cane sugar is injected into the stomach of a living animal, if the portal blood be examined twenty or thirty minutes afterward, it is found to contain no cane sugar, but a carbohydrate like that produced from it by the action of the ferment already described.

HUMAN PHYSIOLOGY, BY HENRY POWER, F. R. C. S.—This is an excellent little book of its kind, but the kind is very poor. The work contains statements of a great number of physiological facts condensed within a small space, and will therefore be welcomed by the student who is cramming for an examination. But the teacher-physiologist who satisfies himself with the bare mention of facts, allows his subject to lose its chief importance as a discipline to the reasoning powers, and is liable to eventually miss his aim altogether, for isolated facts are with difficulty remembered when not strongly bound together into chains of cause and effect.

THE FIBRIN-FERMENT.—It is a question of considerable interest as to whether those peculiar bodies known as animal ferments, such as *ptyalin*, *pepsin*, *trypsin*, etc., are proteid substances, or whether they are of simpler chemical composition. Messrs. Lea and Green have recently investigated the so-called fibrin-ferment which induces coagulation in drawn blood, and they find that while it seems impossible to obtain the ferment in a solution which is quite free from proteid reaction, still this can be so nearly accomplished that there is little doubt that the ferment is a non-proteid body. The fibrin-ferment is best prepared by diluting fresh blood with 10—15 times its volume of water, and after the mixture has stood twenty-four hours, washing the clot until it is colorless; the clot is then pressed, rinsed and extracted in the cold for two days in 8 p. c. sodic chloride. This extract produces rapid coagulation of diluted blood plasma, and it may be nearly completely freed from proteids if a large amount of strong alcohol be added; a watery extract made from the precipitate thus formed will have marked ferment action.—*Journal of Physiology, vol. iv., No. 6.*